

Please add new Claims 34 – 48 as follows:

Sub C1
~~34. (New) A low resistance ITO thin film having a resistivity less than $1 \times 10^{-4} \Omega \text{ cm}$, said film deposited on a crystalline substrate by epitaxial growth.~~

35. (New) A low resistance ITO thin film according to claim 34, wherein Sn dopant activity defined as {carrier density (cm^{-3})/ Sn density in said ITO film (number of Sn / cm^3)} is greater than 80%.

Sub C2
~~36. (New) A low resistance ITO thin film according to claim 34, wherein mobility is greater than $39 \text{ cm}^2/\text{Vs}$.~~

37. (New) A substrate having a low resistant ITO thin film comprising:
a crystalline substrate; and
a low resistance ITO thin film having a resistivity lower than $1 \times 10^{-4} \Omega \text{ cm}$ produced for deposition on said crystalline substrate by epitaxial growth.

38. (New) A substrate having a low resistant ITO thin film according to claim 37, wherein Sn dopant activity defined as {carrier density (cm^{-3})/ Sn density in said ITO film (number of Sn / cm^3)} is greater than 80%.

39. (New) A substrate having a low resistant ITO thin film according to claim 37, wherein mobility of said ITO thin film is greater than $39 \text{ cm}^2/\text{Vs}$.

40. (New) A substrate having a low resistant ITO thin film according to claim 37, wherein said ITO thin film has a pattern formed thereon.

41. (New) A substrate having a low resistant ITO thin film according to claim 37, wherein said ITO thin film has a In_2O_3 crystal structure of one of a C-rare earth type and a corundum type.

42. (New) A substrate having a low resistant ITO thin film according to claim 37, wherein said ITO thin film is formed on said substrate which has a temperature of $500 - 1000^\circ\text{C}$ by a pulsed laser deposition method.

43. (New) A substrate having a low resistant ITO thin film according to claim 37, wherein said ITO thin film is formed by one of a low-voltage sputtering, an oxygen cluster beam deposition, a chemical vapor deposition, a metal organic chemical vapor deposition, a metal organic chemical vapor deposition, a metal organic chemical vapor deposition – atomic layer deposition, and a molecule beam epitaxy.

Sub C37
~~44. (New) A substrate having a low resistant ITO thin film according to claim~~

37, wherein said crystal substrate is provided to accept an In_2O_3 crystal structure deposited thereon.

Sub C47
~~45. (New) A substrate having a low resistant ITO thin film according to claim~~

37, wherein said substrate is a single crystal substrate.

~~46. (New) A substrate having a low resistant ITO thin film according to~~

claim 37, wherein said crystalline substrate is one of a YSZ single crystal substrate, a substrate on which a C-axis oriented ZnO thin film is formed, a sapphire substrate, a SiC single crystal substrate and a silicon single crystal substrate.

~~47. (New) A substrate haaving a low resistant ITO thin film according to~~

claim 37, wherein said crystalline substrate has a C axis oriented ZnO film formed thereon.

~~48. (New) The method for manufacturing a low-resistance ITO film of claim 37, said method comprising a step of:~~

depositing an ITO film on a crystalline substrate having a temperature of 500-1000°C by a pulsed laser vapor deposition method.